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PATENT SPECIFICATION

582,469



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No. 9818/44.

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PROVISIONAL SPECIFICATION

Improvements in or relating to Resilient Mountings

We, ANDRE RUBBER COMPANY LIMITED, a Company registered under the Laws of Great Britain, of Hook Rise, Tolworth, Surbiton, Surrey, and JAMES MACKAY BUCHAN, British Subject, of the above Company's address, do hereby declare the nature of this invention to be as follows:—

This invention relates to resilient mountings particularly intended for vehicle bodies and the like of the kind in which metal plates or channels are connected together by rubber which is bonded to them. The object of the invention is to provide a mounting in which the rubber is always in compression although the load can be taken up in more than one direction.

According to this invention the mounting comprises a plate having a number of apertures or sockets adapted to cooperate with a second plate provided with a number of projecting fins or tongues which are smaller than the sockets into which they are adapted to project, the spaces between the sockets and the fins being filled with rubber which is bonded to the walls of the sockets and the surfaces of the fins. Thus the plate is in effect provided with a number of tongues which are considerably smaller than the sockets on the opposite member, but these spaces are filled by the moulded rubber which further bonds the plates together. Preferably the tongues extend in a plane parallel to the floor of the vehicle and one of the plates, for example that which contains the sockets, is adapted to be secured to the side member of the vehicle chassis whilst the other is attached, as by bolts, to a bracket on the body or sub-frame of the vehicle.

The weight of the body and its load causes a downward thrust on the plate which carries the tongues and thus com-

presses the rubber between the lower faces of the tongues and the lower side of each socket or aperture. If the vehicle encounters a road shock which momentarily reverses the load, the rubber is compressed between the upper faces of the tongues and the upper wall of each socket. The edges of the tongues which are of smaller area than the upper or lower surfaces deal with shocks in the fore and aft or longitudinal direction due to violent acceleration or braking forces, thus compressing the bonded rubber between the ends of the sockets and the edges of the tongues. Side sway of the body will cause the rubber to be compressed between the faces of the two plates and conveniently there is a small gap left between the outer ends of the sockets and the adjacent face of the opposite plate.

The number and size of the tongues and of their sockets can be varied to suit the loads which are likely to arise and without departing from the invention there may be combined in a single mounting tongues arranged at right angles to one another so that say at each end of the plate there are tongues having their larger area in a vertical plane whilst the majority of the tongues, as in the construction already described, are normally parallel to the floor of the vehicle.

Although the invention is primarily applicable to mountings for vehicle bodies obviously the various units in a vehicle such as the engine may be connected to the chassis in a similar manner, and various types of machines which have to be protected from shock, e.g. auxiliary machinery on ships, may be provided with mountings as above described without departing from the invention.

Dated this 22nd day of May, 1944.

KILBURN & STRODE,
Agents for the Applicants.

COMPLETE SPECIFICATION

Improvements in or relating to Resilient Mountings

We, ANDRE RUBBER COMPANY LIMITED, a Company registered under the Laws of Great Britain, of Hook Rise, Tolworth,

[Price 1/-]

Surbiton, Surrey, and JAMES MACKAY BUCHAN, British Subject, of the above Company's address, do hereby declare the

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nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

5 This invention relates to resilient mountings and is particularly but not exclusively applicable to mountings for vehicle bodies of the kind in which metal plates or channels are connected together by rubber which is bonded to them. The object of the invention is to provide a mounting in which the rubber is always in compression although the load can be taken up in more than one direction.

15 It has already been proposed to use a mounting in which two elements have a number of vertical, mutually enveloping parallel plates, alternately joined to one element and the other, and mutually connected by rubber or other resilient material which is bonded to the surfaces of the plates, and undergoes predominantly shear stress in supporting the load, the mounting having all the bonded surfaces in substantially parallel, vertical planes.

A mounting has also been proposed in which two elements are each provided with a plurality of coaxial truncated conical surfaces alternately inclined in opposite directions and enveloping one another, a ring of rubber or like elastic material being interposed between each two corresponding truncated conical surfaces, and either rolling between the said surfaces, or being bonded to them.

According to the present invention the mounting includes a plate having a row or rows of apertures or sockets, formed therein and circumferentially complete, a second plate having a corresponding number of fins or tongues which are smaller than the sockets and project into them, and rubber completely surrounding each tongue and bonded to the surfaces of the tongue and the socket.

In this specification, "circumferentially complete" is intended to mean "enclosed within a continuous wall, but open at both ends, or one end only".

When the mounting is applied to a vehicle the tongues preferably extend in substantially horizontal planes, i.e. parallel to the floor of the vehicle, one of the plates for example that containing the sockets, being secured to the side member of the vehicle chassis while the other is attached as by bolts to a bracket on the body or sub-frame of the vehicle, and one such arrangement is illustrated by way of example in the accompanying drawings, in which

Figure 1 is a front elevation,

Figure 2 is a section on the line 2—2 of Figure 1,

Figure 3 is a side elevation,

Figure 4 is a section on the line 4—4 of Figure 3, and

Figure 5 is a section on the line 5—5 of Figure 3.

In the construction illustrated the mounting comprises a plate A secured by bolts A¹ to one of the side members E of the vehicle frame. The plate A is formed with a series of open-ended rectangular sockets comprising side walls A² and end walls A³.

Associated with the plate A is a second plate D from which a series of tongues D¹ extend into the sockets, the tongues being of smaller dimensions than the sockets so as to be spaced from the walls thereof. The plate D is secured by bolts D² to a suitable bracket B connected to a cross member of the vehicle sub-frame indicated at C.

The space between each of the tongues and the socket within which it lies is filled with rubber F which is connected by bending both to the tongue and to the walls of the socket as shown.

In the arrangement shown the weight of the body of the vehicle and its load causes a downward thrust on the plate D and thus compresses the rubber between the lower faces of the tongues and the lower side walls A² of the sockets. If the vehicle encounters road shock which momentarily reverses the load the rubber is compressed between the upper faces of the tongues and the upper side wall A² of each socket. The edges of the tongues deal with shocks in the fore and aft direction by compression of the rubber between them and the end walls A³ to allow for acceleration or braking forces. Side sway of the body of the vehicle will cause the rubber to be compressed between the tops of the walls A² and A³, and the plate D at the base of the tongues D¹.

The number and size of the tongues and of their sockets can be varied to suit the loads which are likely to arise and in some cases there may be combined in a single mounting tongues arranged in planes at right angles to one another, so that, for example, one or more tongues at each end of the plate have their larger area in a vertical plane whilst the majority have their larger area in a horizontal plane as shown in the construction illustrated. Further the areas of the various faces of the tongues may be varied to suit requirements.

Although the invention is primarily applicable to mountings for vehicle bodies the various units in a vehicle, such as the engine, may if desired be mounted on flexible mountings according to the invention which may also be employed for

the mounting of various types of machines which have to be protected from shock, for example the auxiliary machinery on ships.

5 Having now particularly described and ascertained the nature of our said invention and in what manner the same is to be performed, we declare that what we claim is:—

10 1. A resilient mounting of the kind referred to, including a plate having a row or rows of apertures or sockets, formed therein and circumferentially complete, a second plate having a corre-
15 sponding number of fins or tongues which are smaller than the sockets and project into them, and rubber completely surrounding each tongue and bonded to the surfaces of the tongue and the socket.

20 2. A resilient mounting as claimed in Claim 1 in which the fins or tongues and the sockets are of approximately rectangular cross-section.

3. A resilient mounting as claimed in Claim 1 or Claim 2 in which some of the
25 tongues lie in one plane and some in a plane at right angles thereto.

4. The combination with a vehicle chassis and a body or sub-frame mounted thereon of resilient mountings according
30 to Claim 1 or Claim 2 or Claim 3 supporting the body or sub-frame on the chassis and arranged with the fins or tongues or the majority of them in approximately horizontal planes. 35

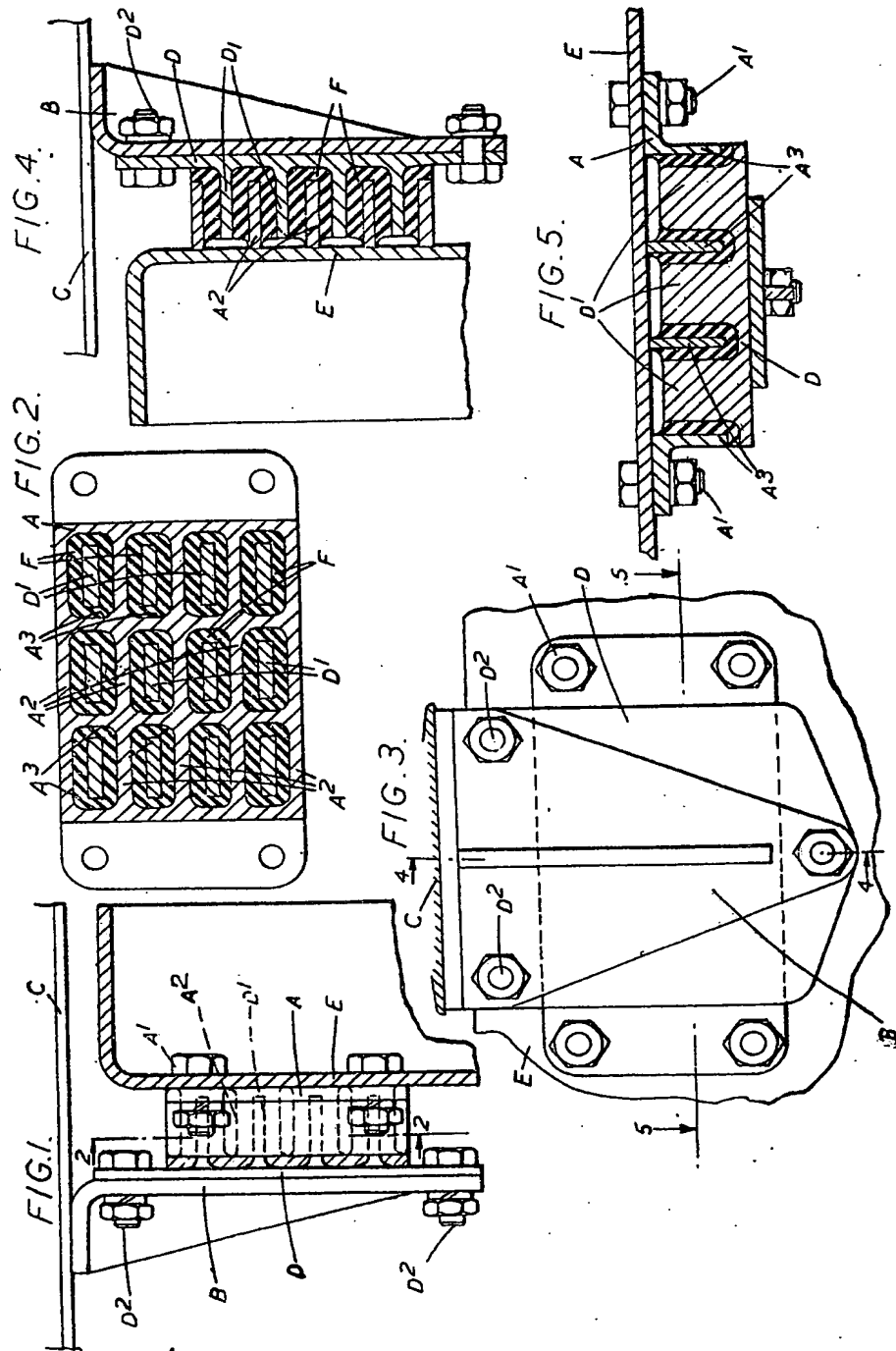
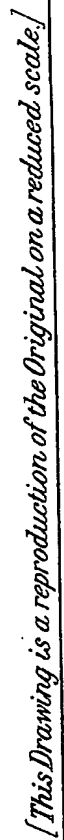
5. A resilient mounting constructed and arranged substantially as described with reference to the accompanying drawings.

6. The combination of a vehicle chassis, sub-frame or body and a resilient mount-
40 ing constructed and arranged substantially as described with reference to the accompanying drawings.

Dated this 19th day of March, 1945.

KILBURN & STRODE,
Agents for the Applicants.

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